



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,201	04/16/2004	Noriyasu Amano	461-173	7674
23117 7590 04/07/2008 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER FLANIGAN, ALLEN J				
ART UNIT		PAPER NUMBER		
3744				
MAIL DATE		DELIVERY MODE		
04/07/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/825,201

**Applicant(s)**

AMANO ET AL.

**Examiner**

Allen J. Flanigan

**Art Unit**

3744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 3-9 is/are pending in the application.
- 4a) Of the above claim(s) 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE-US)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Claim 3 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 7/27/2007.

The indicated allowability of claims 4-8 is withdrawn in view of the newly discovered reference(s) to Kanda et al. and Foley. Rejections based on the newly cited reference(s) follow.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 4, 5, 7, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanda et al.

Kanda et al. show a thermal storage tank having buoyant members disposed therein that contain a thermal storage material (water) buoyed by an empty space 24 provided at the top of the members. Regarding the recitations concerning "stored fuel stored in the tank", this is deemed a functional recitation concerning the intended use of the claimed storage device. The fuel is not a positively recited element of the claim, and thus it is not necessary for anticipation purposes that Kanda et al. disclose using their device with fuel as a flowable heat exchange medium within the tank. At most the claims require the storage tank of Kanda et al. be *capable* of such use.

The recitations in claims 7 and 9 regarding "ordinary" temperature are essentially ineffective in limiting the claims. Ordinary is such a widely used and imprecise term that no particular range of values can be ascribed to "ordinary temperatures".

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda et al. in view of Foley.

Kanda et al. do not indicate clearly how the coolant within the storage tank is to be cooled or refrigerated, only indicated that the "antifreeze solution . . . is cooled and circulated through the tank by a refrigerator". Presumably some circulating system would be employed, such as that shown in Foley where a loop connects the tank with a chiller (evaporator section) of a refrigerant circuit. Thus, it would have been obvious to one of ordinary skill in the art to provide an inlet and outlet in the tank 10 of Kanda et al. for the antifreeze. As for the relative sizes of the floating heat containers, it would have been readily apparent to one of ordinary skill in the art that some means would need to be provided for preventing freely floating containers within a tank from being sucked into, and clogging, a fluid outlet from the tank.

Various means, including placing a screen over the outlet, or sizing the outlet so that it would be physically impossible for the floating containers to fit therein, would have readily occurred to one of ordinary skill in the art.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanda et al. in view of Takeda et al.

Kanda et al. disclose the use of water as the storage material in the bouyant containers in the illustrative embodiment, but specifically suggest that

"It is a further object of the invention to provide any liquid of which has a freezing temperature higher than 0.degree. C. instead of water, because such a liquid can raise the temperature of the antifreeze solution and improve the efficiency of the refrigerator" (bottom of column 2)

Takeda et al. disclose that calcium chloride hexahydrate is known as a thermal storage material and known to have a melting point in the range of 29-32 degrees Celsius (lines 14-19 of column 1). Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to use the known material disclosed in Takeda et al. in the containers of Kanda et al. in view of their express indication of the desirability of using alternates to water that have higher melting/freezing temperatures.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patry et al. show encapsulated heat storage material comprising water, salt hydrates, etc.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen J. Flanigan/  
Primary Examiner, Art Unit 3744